

CLAIMS

The listing of claims below will replace all prior versions and listings of claims in the application:

Listing of claims:

Claims 1-18 (cancelled).

19. (currently amended). A method of bone repair comprising the step of applying a composition comprising a porous, biodegradable, three-dimensionally fixed matrix having shape retention comprising a ~~bound~~ network of water-insoluble biopolymer mineralized by formation of mineral thereon, and said network bound with a water-insoluble binder cross-linked binder, wherein said composition is present in an amount effective to promote bone growth at a desired site of bone repair.

Claim 20 (previously presented). A method according to claim 19 wherein the shape retention of said matrix is maintainable without fragmentation upon implantation.

Claims 21-23 (cancelled).

24. (previously presented). A method according to claim 19 wherein said biopolymer comprises collagen.

25. (previously presented). A method according to claim 19 wherein said binder comprises collagen.

26. (currently amended). A porous, biodegradable, three-dimensionally fixed matrix for the replacement of bone comprising a ~~bound~~ network of water-insoluble biopolymer fibers[[,]] and mineral, said network bound with a cross-linked binder and a ~~water-soluble binder rendered insoluble by cross-linking~~ wherein said mineral is immobilized within said matrix by said binder.

27. (previously presented). A matrix according to claim 26 which maintains physical integrity for a period of at least about three days after implant into a physiological environment in which bone replacement is occurring.

28. (previously presented). A matrix according to claim 26 wherein said binder is selected from the group consisting of soluble collagen, gelatin, polylactic acid, polyglycolic acid, copolymers of lactic and glycolic acid, polycaprolactone, carboxymethylcellulose, cellulose esters, dextrose, dextran, chitostan, hyaluronic acid, ficol, chondroitin sulphate, polyvinyl alcohol, polyacrylic acid, polypropylene glycol, polyethylene glycol, water-soluble polyacrylates and water-soluble polymethacrylates.

29. (previously presented) A matrix according to claim 26 wherein said biopolymer fibers comprise fibrillar collagen.

30. (previously presented) A matrix according to claim 26 wherein said mineral comprises calcium phosphate.

31. (previously presented) A matrix according to claim 26 wherein said mineral comprises hydroxyapatite.

32. (previously presented) A matrix according to claim 26 wherein said mineral consists of particles of a ~~diameter of~~ size no greater than about five microns.

Claims 33-35 (cancelled).

Claim 36. (currently amended). A method of bone repair comprising the step of applying a composition comprising a porous, biodegradable, three-dimensionally fixed matrix comprising a ~~bound~~ network of water-insoluble biopolymer fibers[[,]] and mineral, said network bound with a cross-linked binder and a water-soluble binder rendered insoluble by cross-linking wherein said mineral is immobilized within said matrix by said binder[[,]] and said composition is present in an amount effective to promote bone growth at a desired site of bone repair.

37. (previously presented) A method according to claim 36 wherein said matrix has shape retention maintainable without fragmentation upon implantation.

38. (previously presented) A method according to claim 36 wherein said biopolymer comprises collagen.

39. (previously presented) A method according to claim 36 wherein said binder comprises collagen.

40. (previously presented). A matrix according to claim 28 wherein said binder comprises collagen.

41. (new) A method according to any one of claims 36 to 39 wherein said composition further comprises a bone growth factor.

42. (new) A method according to any one of claims 36 to 39 wherein said composition further comprises bone marrow.

43. (new) A method according to claim 41 wherein said composition further comprises bone marrow.

44. (new) A method according to claim 41 wherein said composition further comprises autogenous bone.

45. (new) A composition for bone repair comprising a porous, biodegradable, three-dimensionally fixed matrix comprising a network of water-insoluble biopolymer fibers and mineral, said network bound with a cross-linked binder wherein said mineral is immobilized within said matrix by said binder.

46. (new) A composition according to claim 45 wherein said matrix maintains physical integrity for a period of time of at least about three days after implant into a physiological environment in which bone replacement is occurring.

47. (new) A composition according to claim 45 wherein said binder is selected from the group consisting of soluble collagen, gelatin, polylactic acid, copolymers of lactic acid and glycolic acid, polycaprolactone, carboxymethylcellulose, cellulose esters, dextrose, dextran, chitosan, hyaluronic acid, ficol, chondroitin sulfate, polyvinyl alcohol, polyacrylic acid, polypropylene glycol, polyethylene glycol, water-soluble polyacrylates, and water-soluble polymethacrylates.

48. (new) A composition according to claim 45 wherein said biopolymer fibers comprise fibrillar collagen.

49. (new) A composition according to claim 45 wherein said mineral comprises calcium phosphate.

50. (new) A composition according to claim 45 wherein said mineral comprises hydroxyapatite.

51. (new) A composition according to claim 45 wherein said mineral consists of particles of a size no greater than about 5 microns.

52. (new) A composition according to claim 45 wherein said binder comprises collagen.

53. (new) A composition according to any one of claims 45 through 52 further comprising bone marrow.

54. (new) A composition according to any one of claims 45 through 52 further comprising autogenous bone.

55. (new) A composition according to any one of claims 45 through 52 further comprising a bone growth factor.

56. (new) A composition according to claim 53 further comprising a bone growth factor.